

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

B
S
B
a cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner ring
and said outer ring and disposed opposite to each other; and
a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space
defined between said sealing members at the both ends in the axial direction, wherein the amount
of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

2. (*Amended*) The rolling bearing for a hard disk drive according to claim 1, in which the
amount of said lubricating oil is not more than 30% by volume of the to-be-sealed bearing space.

3. (*Amended*) The rolling bearing for a hard disk drive according to claim 1, in which the
amount of said lubricating oil is in a range of 4-25% by volume of the to-be-sealed bearing space.

4. (*Amended*) The rolling bearing for a hard disk drive according to claim 1, in which said
lubricating oil is preliminarily contained in said cage.

5. (*Amended*) The rolling bearing for a hard disk drive according to claim 4, in which an
amount of said lubricating oil preliminary contained in said cage is in a range of 0.1-80% by weight
of said cage.

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

6. (Amended) The rolling bearing for a hard disk drive according to claim 5, in which the amount of said lubricating oil preliminary contained in said cage is in a range of 10-70% by weight of said cage.

Please add the following new claims:

8. (New) The rolling bearing for a hard disk drive according to claim 1, wherein a predetermined amount of said lubricating oil is injected into the to-be-sealed bearing space of the rolling bearing while said lubricant oil is prevented from adhering to an external portion of the rolling bearing.

9. (New) A rolling bearing for a hard disk drive comprising:
an inner ring;
an outer ring;
a plural number of rolling elements located between said inner ring and said outer ring;
a cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant comprising a lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the kinematic viscosity of the sole lubricant is not more than 400mm²/s.

31
Add
cont

10. (New) A hard disk drive comprising:
an actuator; and
a rolling bearing for said actuator, comprising:
an inner ring;
an outer ring;
a plural number of rolling elements located between said inner ring and said outer
ring;
a cage supporting said plural number of rolling elements;
a pair of sealing members fixed to both ends in an axial direction of one of said inner
ring and said outer ring and disposed opposite to each other; and
a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed
bearing space defined between said sealing members at the both ends in the axial direction, wherein
the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing
space.

11. (New) The hard disk drive according to claim 10, in which the amount of said lubricating
oil is not more than 30% by volume of the bearing space.

12. (New) The hard disk drive according to claim 10, in which the amount of said lubricating
oil is in a range of 4-25% by volume of the bearing space.

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

b1
app
cont

13. (New) The hard disk drive according to claim 10, in which said lubricating oil is preliminarily contained in said cage.

14. (New) The hard disk drive according to claim 13, in which an amount of said lubricating oil preliminarily contained in said cage is in a range of 0.1-80% by weight of said cage.

15. (New) The hard disk drive according to claim 14, in which the amount of said lubricating oil preliminarily contained in said cage is in a range of 10-70% by weight of said cage.

16. (New) The hard disk drive according to claim 15, in which the amount of said lubricating oil preliminarily contained in said cage is not more than 40% by weight of said cage.

17. (New) The hard disk drive according to claim 10, wherein a predetermined amount of said lubricating oil is injected into the to-be-sealed bearing space of the rolling bearing while said lubricating oil is prevented from adhering to an external portion of the rolling bearing.

18. (New) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

B1
Add
cont

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a lubricating oil contained in a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space.

19. (New) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a lubricating oil contained in a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space, and wherein the kinematic viscosity of the lubricating oil is not more than $400\text{mm}^2/\text{s}$.

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

20. (New) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a lubricating oil confined to a sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space.

21. (New) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

B1
22
cont

a lubricating oil injected into a bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the bearing space, wherein said lubricating oil is preliminarily contained in said cage.

22. (New) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

23. (New) A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

B1
A2
Cont
a sole lubricant comprising a lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the lubricating oil is comprised of base oils and ester oils, wherein the ester oils are at least 20% by weight of the base oils.

24. (New) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein

PRELIMINARY AMENDMENT
U.S. Appln No. 10/051,070
ATTORNEY DOCKET NO. Q68238

the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space.

25. (New) A hard disk drive comprising:

an actuator; and

a rolling bearing for said actuator, comprising:

an inner ring;

an outer ring;

a plural number of rolling elements located between said inner ring and said outer ring;

a resin cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant comprising a lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, and wherein the lubricating oil is comprised of base oils and ester oils, wherein the ester oils are at least 20% by weight of the base oils.